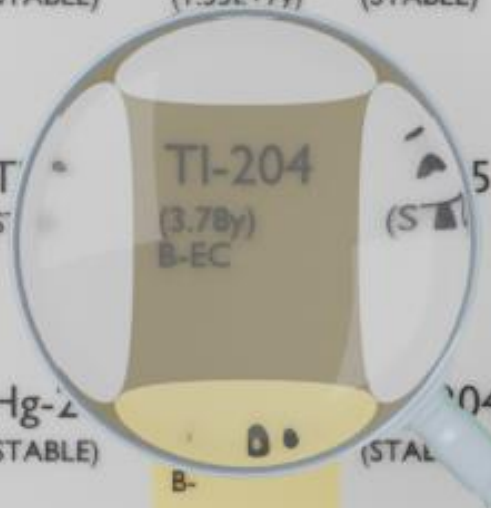




FD-201 (2.33h) CB+	FD-202 (5.25E+4y) ECA	FD-203 (51.873h) EC	FD-204 (STABLE)	FD-205 (1.53E+7y)	FD-206 (STABLE)	FD-207 (STABLE)	FD-208 (STABLE)	FD-209 (3.253h) B-
TI-200 (26.1h) CB+	TI-201 (72.912h) EC	TI-202 (12.23d) EC	TI-203 (4.818h) B-	TI-204 (3.78y) B-EC	TI-205 (1.53E+7y) B-	TI-206 (4.200m) B-	TI-207 (4.77m) B-	TI-208 (3.053m) B-
Hg-199 (STABLE)	Hg-200 (STABLE)	Hg-201 (STABLE)	Hg-202 (STABLE)	Hg-203 (4.818h) B-	Hg-204 (STABLE)	Hg-205 (5.2m) B-	Hg-206 (8.15m) B-	Hg-207 (2.9m) B-

THALLIUM-204

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: TI-204
Atomic number (Z): 81
Mass number (A): 204
Neutron number (N): 123

RADIOACTIVE DECAY

Decay modes: β^- , Electron capture
Half-life: 3.78 [y]
Decay constant: 5.8108e-09 [1/s]
Daughters: Pb-204 (97.1%), Hg-204 (2.9%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.23721 [MeV]
Mean photon energy: 0.00127 [MeV]
Air kerma rate constant, Γ_{10} : 1.921e-19 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 1.921e-19 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 3.801e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

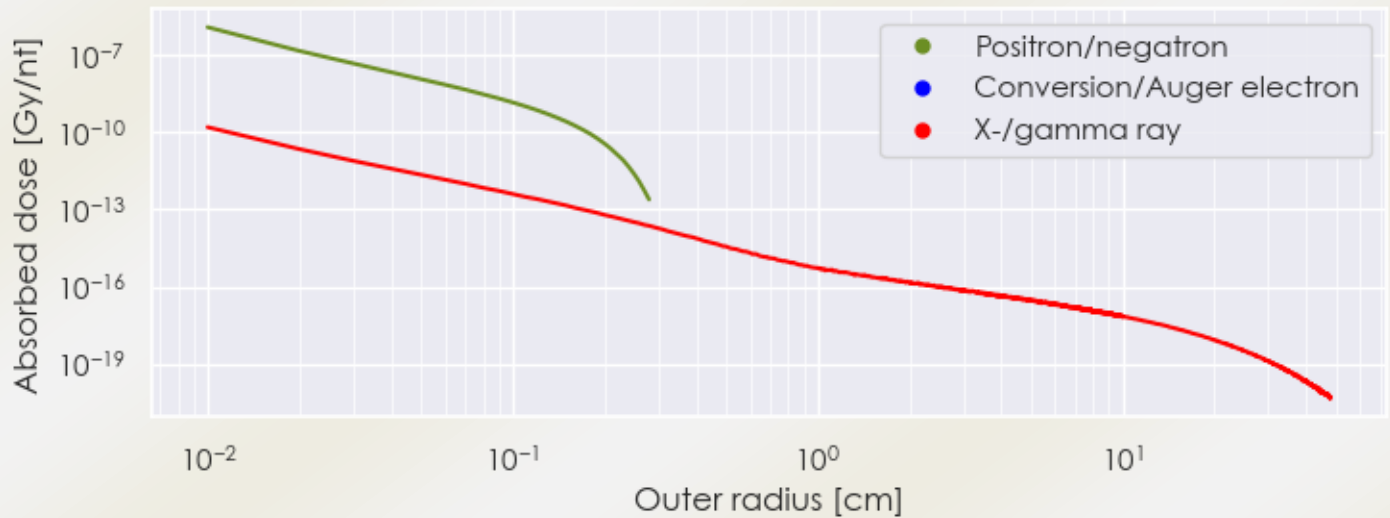
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 3.801×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.035×10^{-16} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

Dose point kernel source: **Graves, et al. Medical Physics. 2019 Nov.; 46(11):5284-5293.**

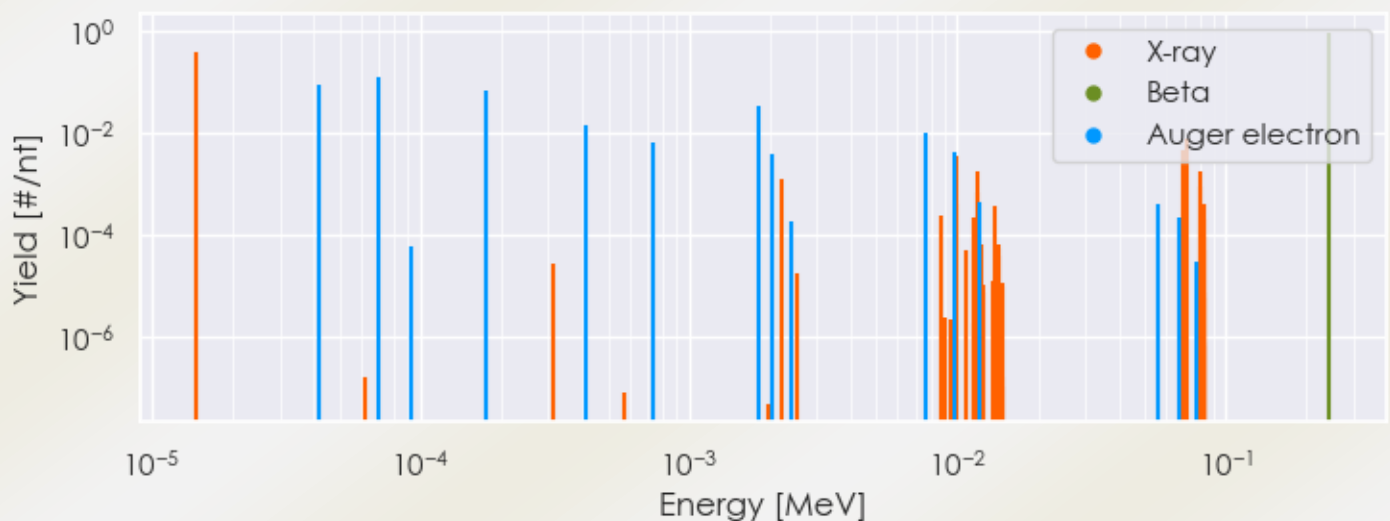
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/TI-204 DPK.csv

SUMMARY SPECTRA (PLOT)

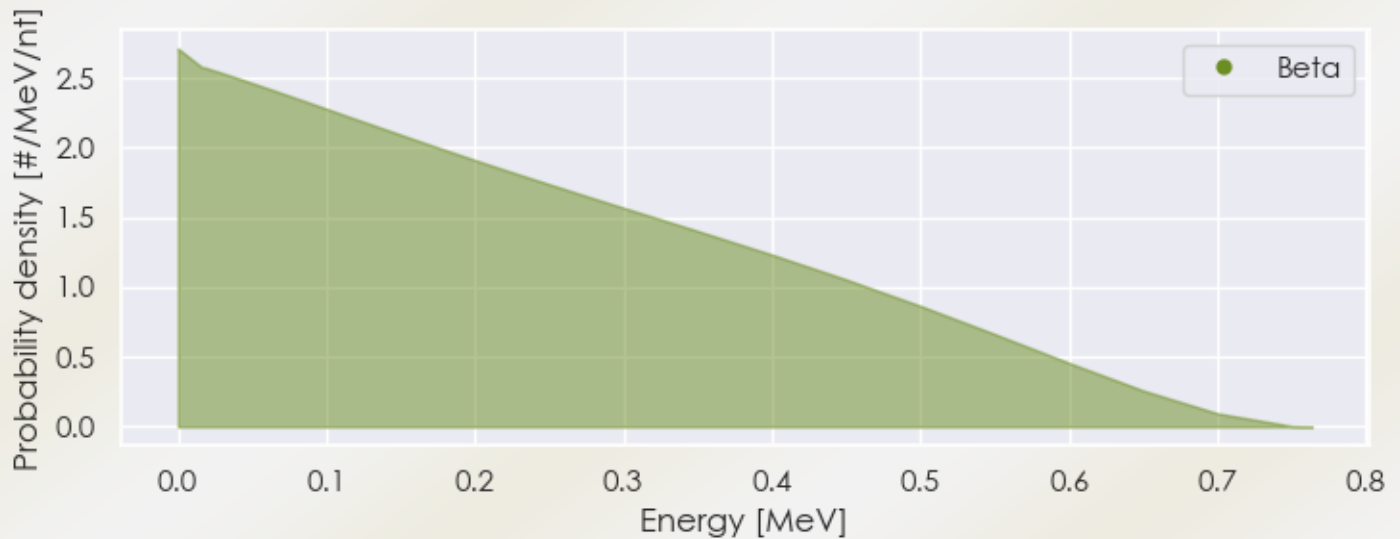
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/TI-204 Summary Spectrum.csv

BETA SPECTRA (PLOT)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated beta spectra file here: www.mirdsoft.org/products/MIRDspecs/TI-204 Beta Spectrum.csv

TABULATED DATA

SUMMARY SPECTRA (TABLE)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**

Note: Radiations with yield < 0.01 are excluded from the table, but are available in the linked *.csv data.

Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/TI-204 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.47008e-05	3.885e-01	X-ray
2.44019e-01	9.710e-01	Beta
4.20422e-05	8.821e-02	Auger electron
7.01089e-05	1.285e-01	Auger electron
1.74615e-04	6.756e-02	Auger electron
4.16636e-04	1.473e-02	Auger electron
1.80648e-03	3.469e-02	Auger electron

USEFUL LINKS

Isotope decay characteristics are periodically updated as better measurements can be made - changes that may not be reflected on this page. Please see useful links:

National Nuclear Data Center (NNDC): <https://www.nndc.bnl.gov/nudat3/mird/>

International Atomic Energy Agency (IAEA) Livechart: <https://www-nds.iaea.org/relnsd/vcharthtml/VChartHTML.html>

REFERENCE LINKS

ICRP Report 107: <https://www.icrp.org/publication.asp?id=ICRP%20Publication%20107>

Graves et al. Dose Point Kernels: <https://doi.org/10.1002/mp.13789>

MIRD Decay Schemes 2nd Edition: https://sites.snmmi.org/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6